Ozone National Ambient Air Quality Standard Health Exceedances on June 21, 2017

Exceedance Locations and Levels

On Wednesday, June 21, 2017, there were no exceedances in New Jersey of the 8-hour average ozone National Ambient Air Quality Standard (NAAQS) of 70 ppb that became effective in December 2015.

No New Jersey station exceeded the 75 ppb ozone NAAQS of 2008, and none exceeded the 84 ppb ozone NAAQS of 1997. The highest 1-hour average ozone concentration recorded on June 21, 2017, in New Jersey was 76 ppb at the Camden Spruce Street station, which is below the 1-hour ozone NAAQS of 120 ppb.

The number of days in 2017 on which exceedances of the 70 ppb ozone NAAQS of 2015 were recorded in New Jersey remains at seven (7). By the 21st of June in 2016, there were ten (10) days on which ozone exceedances were measured in New Jersey (based on the 70 ppb NAAQS of 2015), and there were five (5) days by this same date in 2015 (based on the former 75 ppb NAAQS of 2008). (See Table 1.)

Table 1: New Jersey Exceedance Count

	# of Days NAAQS was Exceeded January 1 - June 21, 2017 NAAQS = 70 ppb	# of Days NAAQS was Exceeded January 1 - June 21, 2016 NAAQS = 70 ppb	# of Days NAAQS was Exceeded January 1 - June 21, 2015 NAAQS = 75 ppb
New Jersey	7	10	5

There is a group of monitoring stations in designated counties of 5 states, New York, Connecticut, Pennsylvania, Delaware and Maryland, that are included in New Jersey's ozone nonattainment areas. From this group of stations in the neighboring states, there were two (2) exceedances of the 70 ppb ozone NAAQS of 2015 recorded on Wednesday, June 21, 2017. (See Table 2.)

Table 2: Ozone NAAQS Exceedances at other Monitoring Stations in New Jersey's Ozone Nonattainment Areas on June 21, 2017

STATE	STATION	Daily Maximum 8-Hr Average (ppb)
CT	Madison-Beach Road	75
CT	Stratford	74

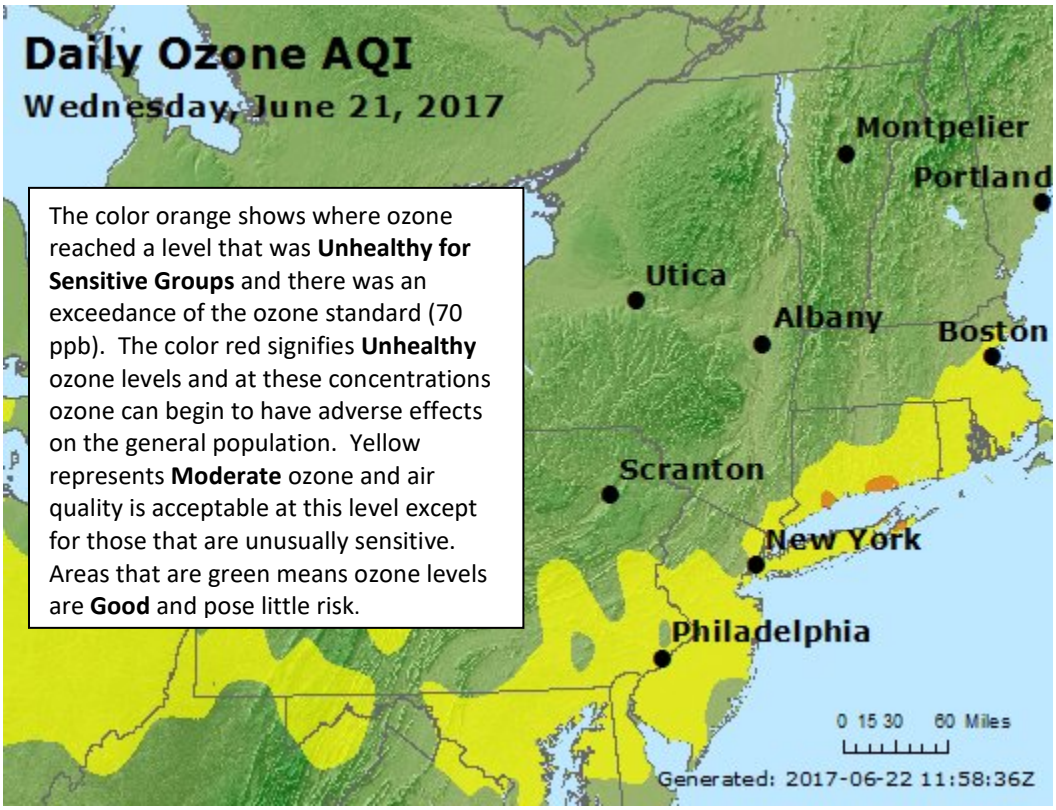
No station exceeded the 75 ppb ozone NAAQS of 2008, and none exceeded the 84 ppb ozone NAAQS of 1997. The highest 1-hour average ozone concentration recorded was 82 ppb at the Madison-Beach Road station in Connecticut, which is below the 1-hour ozone NAAQS of 120 ppb.

Wednesday marks the 8th day in 2017 on which exceedances of the 70 ppb ozone NAAQS of 2015 were recorded in Connecticut. The number of days remains at seven (7) for New York, six (6) days for Maryland and Pennsylvania, and four (4) days for Delaware. (See Table 3.) Figure 1 shows graphically the regions' ozone concentrations on June 13, 2017.

Table 3: Number of Ozone Exceedances by State

STATE	# of Days NAAQS was Exceeded January 1 - June 21, 2017 NAAQS = 70 ppb
Connecticut	8
Delaware	4
Maryland	6
New Jersey	7
New York	7
Pennsylvania	6

Figure 1. Ozone Air Quality Index for June 21, 2017



Source: www.airnow.gov

For ozone terminology definitions see NJDEP Air Quality Planning's Glossary and Acronyms webpage: http://nj.gov/dep/baqp/glossary.html

Weather

Meteorological data from across the region showed partly sunny skies, temperatures reaching the mid-80s, and westerly winds. A frontal boundary extended from Maine southwest across New England, through New Jersey, and into Pennsylvania. This allowed for widespread showers and thunderstorms to affect the region in the late afternoon, evening hours. The timing of these conditions allowed for locally produced ozone in the northern New Jersey and New York City metropolitan area to mix with the pollution transported from Pennsylvania and Ohio to impact coastal Connecticut.

Where Did the Air Pollution that Caused Ozone Come From?

Figures 2, 3, and 4 show the back trajectories at different wind heights for the monitored exceedances on June 21, 2017. The figures illustrate where the winds came from during the 48 hours preceding the high ozone event at the two Connecticut monitors.

Surface level back trajectories (Figure 2) show that elevated ozone at the monitored locations originated at a higher elevation over the Ohio River Valley and was brought to the surface in the vicinity of a frontal boundary. The trajectories show that the surface winds traveled east through West Virginia and Maryland before turning up the I-95 corridor to the Connecticut monitors. These winds picked up locally generated emissions from traffic and industry in the northern New Jersey and New York City metropolitan area. Meanwhile, both the mid-level (Figure 3) and upper level (Figure 4) back trajectories followed similar paths. Originating in the Mid-West, upper level winds traveled through multiple states including the Ohio River Valley before finally passing through the Northern New Jersey and New York City Metropolitan area.

Figure 5 below shows graphically national ozone concentrations on June 20th, 2017.

Figure 2. 48-hour Back Trajectories for June 21, 2017 at 10 meters

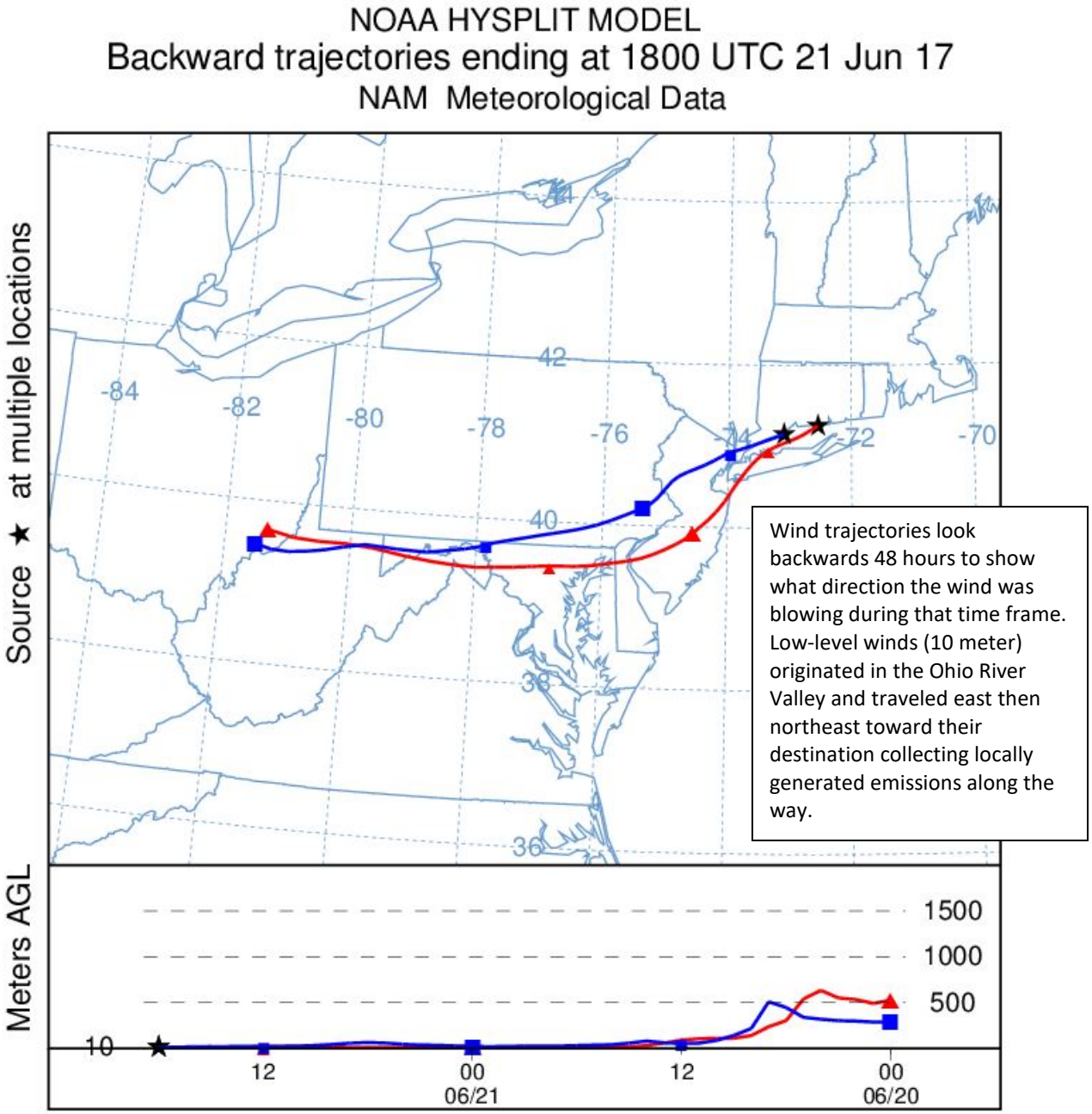


Figure 3. 48-hour Back Trajectories for June 21, 2017 at 500 meters

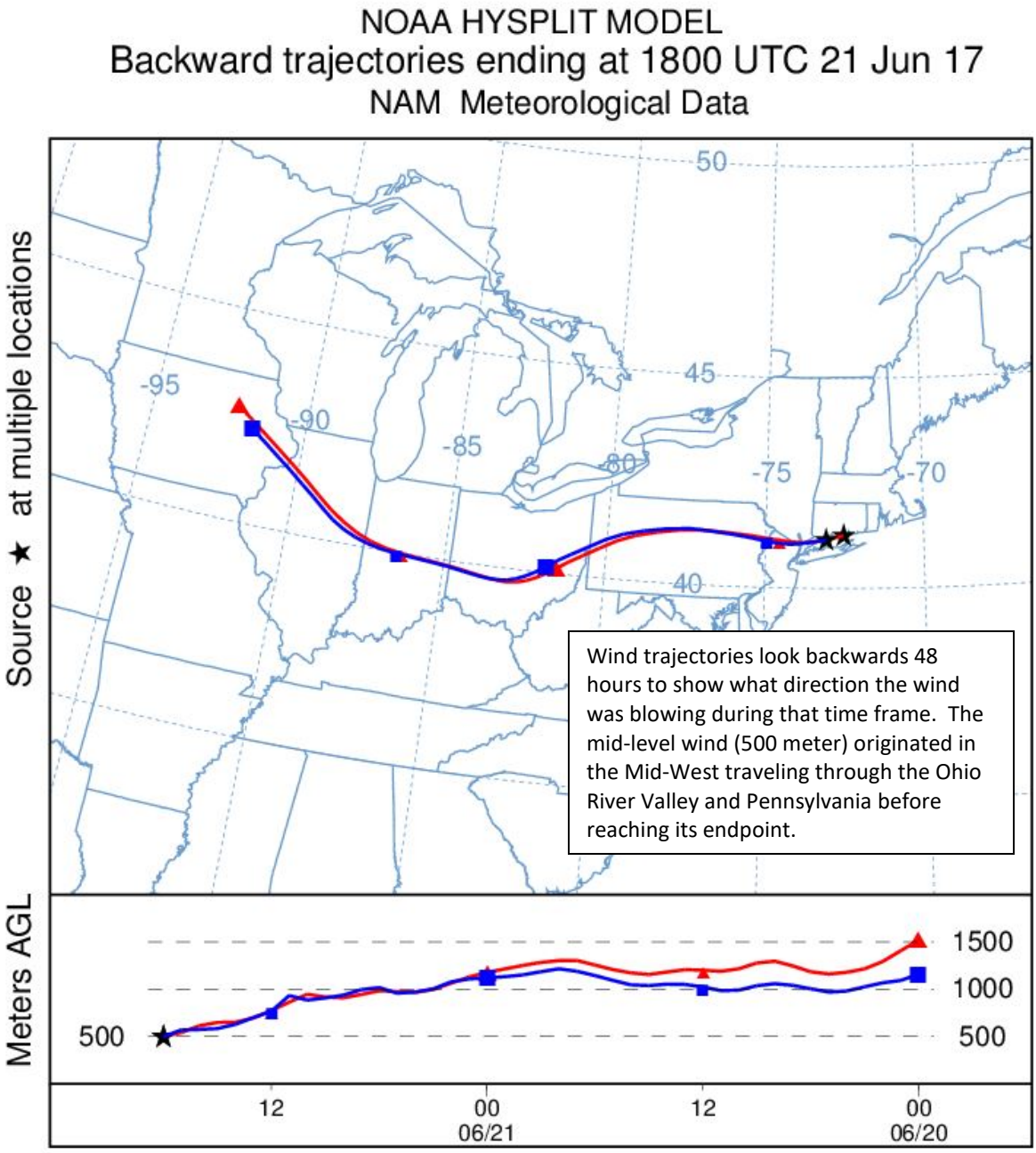


Figure 4. 48-hour Back Trajectories for June 21, 2017 at 1500 meters

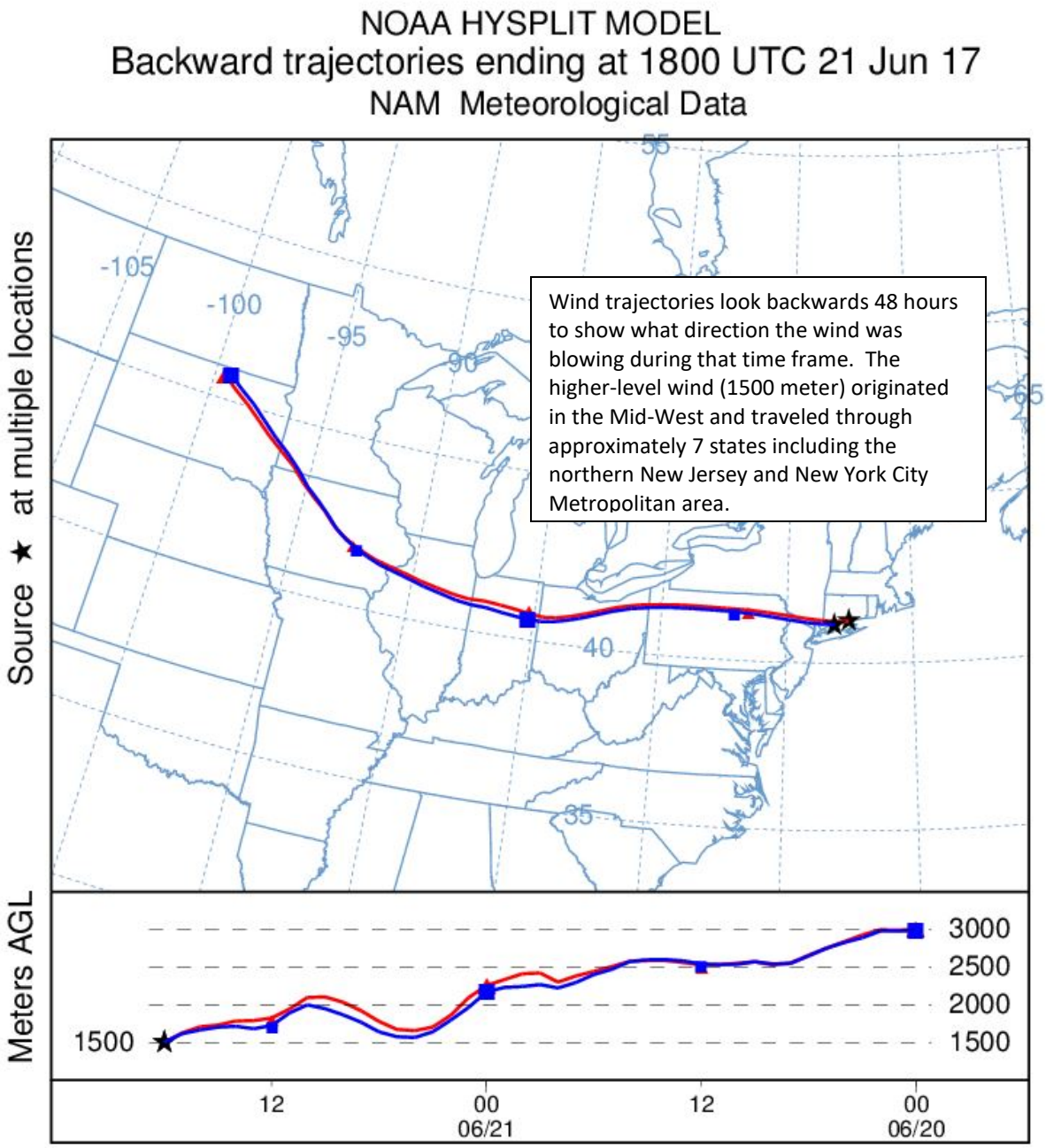
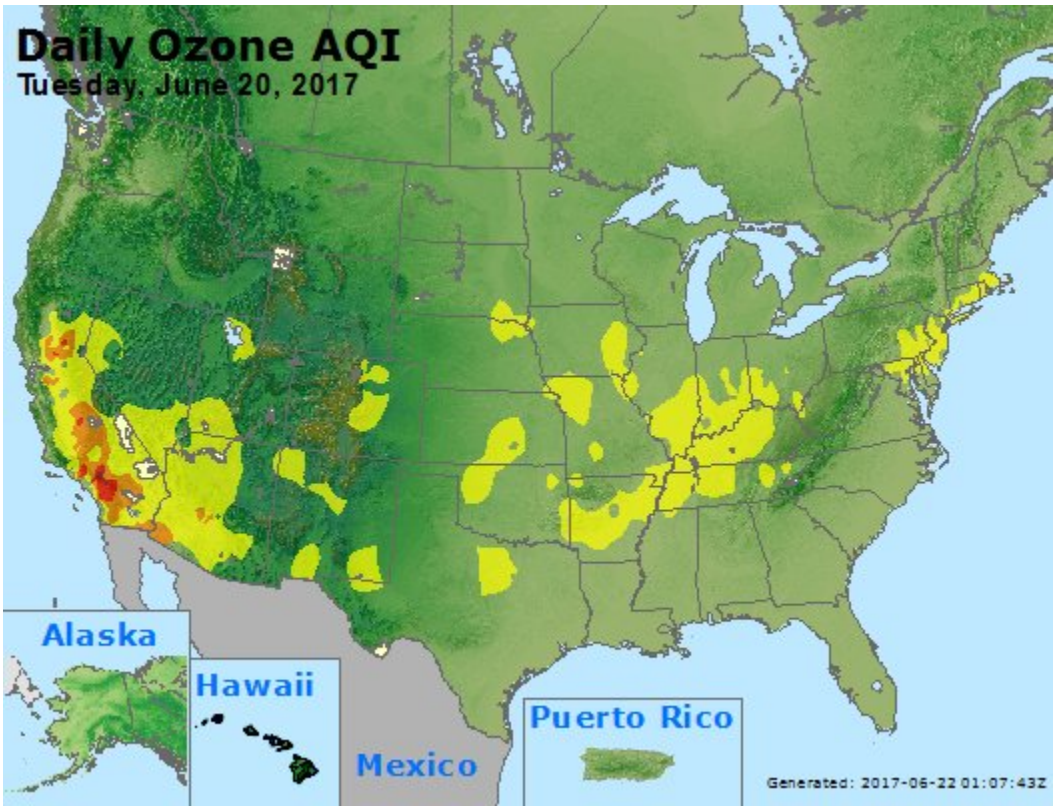


Figure 5. Ozone Air Quality Index for the United States on June 20, 2017



How is Ozone Created?

Ground-level ozone is an air pollutant known to cause a number of health effects and negatively impact air quality and the environment in New Jersey. Ozone is formed when oxides of nitrogen (NOx) and volatile organic compounds (VOCs) react in the presence of sunlight. Ozone can irritate any person's lungs, but the effect may be more pronounced for those with existing lung-related deficiencies, and therefore, one should take extra precautions on bad ozone days.

Find Out About Air Quality Every Day

The "What's Your Air Quality Today?" page at http://www.nj.gov/dep/cleanairnj/ tells you how to sign up to receive notifications and find out when your local air has reached unhealthy ozone levels.